

WHAT IS CLAIMED IS:

1. An engine exhaust apparatus comprising:
an exhaust manifold which comprises:
a plurality of exhaust branches extending toward a
confluence portion, from respective upstream ends to be
5 connected with cylinders of an engine; and
a straight pipe section extending from the confluence
portion at which exhaust streams in the exhaust branches
merge, toward a downstream end adapted to be connected to
an exhaust purifying catalyst.
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2. The engine exhaust apparatus as claimed in Claim 1,
wherein the exhaust manifold further comprises a flare section
expanding from the straight pipe section to the downstream
end of the exhaust manifold.
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3. The engine exhaust apparatus as claimed in Claim 2,
wherein an expanding angle of the flare section is smaller than
or equal to 60°.
- 20 4. The engine exhaust apparatus as claimed in Claim 1,
wherein the exhaust manifold further comprises a first
combined branch into which two of the exhaust branches
merge together, and a second combined branch into which
other two of the exhaust branches merge together, and the
25 first and second combined branches merge together at the
confluence portion into the straight pipe section.
5. The engine exhaust apparatus as claimed in Claim 4,
wherein the exhaust branches connected to the first combined
30 branch are branches to be connected with two of the cylinders

of the engine which are not consecutive in a firing order of the engine, and the exhaust braches connected to the second combined branch are branches to be connected with two of the cylinders of the engine which are not consecutive in the firing
5 order of the engine.

6. The engine exhaust apparatus as claimed in Claim 4, wherein, in each of the first and second combined branches, the two exhaust branches meet at a confluence angle smaller
10 than or equal to 20° .

7. The engine exhaust apparatus as claimed in Claim 4, wherein the first and second combined branches meet at a confluence angle smaller than or equal to 20° .

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8. The engine exhaust apparatus as claimed in Claim 4, wherein an upstream end of the second combined branch at which two of the exhaust branches meet is located on an upstream side of an upstream end of the first combined branch
20 at which other two of the exhaust branches meet.

9. The engine exhaust apparatus as claimed in Claim 4, wherein the exhaust branches connected to the second combined branch extend laterally toward each other.

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10. The engine exhaust apparatus as claimed in Claim 4, wherein first and fourth branches are connected to the first combined branch, and second and third branches are connected to the second combined branch, the first, second,
30 third and fourth branches are the exhaust branches for first, second, third and fourth cylinders of the engine which are

arranged in a row so that the second and third cylinders are located between the first and fourth cylinders in the row of the cylinder.

5 11. The engine exhaust apparatus as claimed in Claim 10, wherein the second combined branch comprises a straight section.

12. The engine exhaust apparatus as claimed in Claim 11,
10 wherein the first combined branch comprises a straight section shorter than the straight section of the second combined branch.

13. The engine exhaust apparatus as claimed in Claim 12,
15 wherein the straight sections of the first and second combined branches extend side by side to the straight pipe section; and the first combined branch is located between the second combined branch and the upstream ends of the exhaust manifold.

20 14. The engine exhaust apparatus as claimed in Claim 1, wherein the downstream end of the exhaust manifold is adapted to be connected with the exhaust purifying catalyst in such a manner that an angle between a center line of the
25 straight pipe section and a center line of the exhaust purifying catalyst is smaller than or equal to 30°.

15. The engine exhaust apparatus as claimed in Claim 1,
wherein the engine exhaust apparatus further comprises the
30 exhaust purifying catalyst including a thin-wall catalyst carrier

of ceramic having a wall thickness smaller than or equal to 3 mil.

16. The engine exhaust apparatus as claimed in Claim 1,
5 wherein an exhaust valve opening timing is set in a range from 30° before a bottom dead center to the bottom dead center of the engine.

17. An engine exhaust apparatus comprising:
10 an engine including exhaust ports for cylinders;
an exhaust purifying catalyst; and
an exhaust manifold which comprises:
means for conveying exhaust, from the exhaust ports of
the engine, toward a confluence portion; and
15 means for collecting exhaust streams from the exhaust
ports at the confluence portion, and directing a combined
exhaust stream continuously in a longitudinal direction of the
exhaust purifying catalyst.